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10/807,987	03/24/2004	Katsuyoshi Hiraki	1117.70175	4463
<div>7590 Patrick G. Burns, Esq. GREER, BURNS & CRAIN, LTD. Suite 2500 300 South Wacker Dr. Chicago, IL 60606</div>				
<div>07/09/2009</div>				
<div>EXAMINER</div>				
<div>CHOW, YUK</div>				
<div>ART UNIT</div>		<div>PAPER NUMBER</div>		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/807,987

Applicant(s)

HIRAKI ET AL.

Examiner

YUK CHOW

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-10, 12 and 14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-10, 12 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S5108)
Paper No(s)/Mail Date 01/22/2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, applicant claimed that "a data driver for outputting the corrected data received from the image data processor...to data lines of LCD parts; and

"data driver output a correction value for correcting the input image data of the maximum tone and input image data of the minimum tone."

Contrary to Fig. 1 of the specification, data driver (6) only receives data from image data processor (4) and does not outputting correction value for correcting the input.

As a result, the function of data driver is inconsistency in claim 1, which cannot be understood by one ordinary skill in the art, it is unclear whether that data driver is used for data correction function or simply output data to the LCD parts.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-5, 9,12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumashiro (US 5,898,796) in view of Someya et al.(US 2003/0080983)

As to **claim 1**, Kumashiro discloses a display device configured to compare inputted image data and image data of a preceding frame and subject the inputted image data to data correction for improving response speed of display based on a result of the comparison, comprising;

an image data processor for correcting the inputted image data (see Fig. 1, input signal); and

a data driver for outputting the corrected data received from the image data processor corresponding to the input image data (Fig. 1(output signal of N levels).

wherein at least one of an input image data of a maximum tone and an input image data of a minimum tone is separately used only for the data correction (see Fig. 1(12) and Fig. 9A-9E) and is not subject to the data correction in the image data processor (see Fig. 8, Min and Max is not subject to data correction in the image data processor), and

the data driver outputs a correction value (Fig. 6, sign and absolute value) for correcting the input image data of the maximum tone and the input image data of the minimum tone (see Col. 6 lines 4-45).

However, Kumashiro's disclosure does not teach a gate driver for outputting control signal output from the image data processor to gate line of the liquid crystal display part;

In the same field of endeavor, Someya discloses a liquid crystal driving circuit wherein teaches error correction method for driving LC display unit (see Fig. 60(10), LCD display unit inherently has a gate driver).

It would have been obvious to one ordinary skill in the art to apply error correction method to LCD as in Someya with display device of Kumashiro, because error correction technique is commonly used to improve accuracy and response speed (see Someya's abstract).

As to **claim 3**, Kumashiro and Someya disclose a liquid crystal display device according to claim 1,

wherein all tones corresponding to the input data that said data driver is capable of outputting are displayed by arbitrarily combining all the outputs of said data driver except the output corresponding to the input image data of the maximum tone and minimum tone. (see Kumashiro Fig. 8(Max-Min))

As to **claim 4**, Kumashiro and Someya disclose a liquid crystal display device according to claim 3, further comprising:

a table (see Kumashiro Fig. 11(51)) in which the tones that said data driver is capable of outputting are shown so as to be related to the combinations of the outputs of said data driver except the output corresponding to the input image data of the maximum tone and minimum tone. (see Kumashiro Col. 5 lines 23-43)

As to **claim 5**, Kumashiro and Someya disclose a liquid crystal display device according to claim 3,

wherein an error diffusion method is applied to the combinations of the outputs of said data driver except the output corresponding to the input image data of the maximum tone and minimum tone. (see Kumashiro Fig. 1, the output of the image characteristic unit, namely Max and Min are not combined to the output)

As to **claim 9**, Kumashiro discloses a display device configured to compare inputted image data and image data of a preceding frame and subject the inputted image data to data correction for improving response speed of display based on a result of the comparison, comprising:

an image data processing part (Fig. 1(1)) for correcting the inputted image data;

an error diffusion processing part (Fig. 1(2-11)) configured to process the image data for generating a mean tone (Fig. 3(T3)) between a first tone and a second tone,

wherein said image data processing part outputs a signal to prohibit said error diffusion part from generating the mean tone for image data that has undergone the data correction. (see Fig. 6, if neither the positive component nor the negative component of calculated error data is fed back to the error diffusion process at all by setting gain to "0" or no data is undergone for correction, see Col. 6 lines 4-18).

However, Kumashiro's disclosure does not teach a gate driver for outputting control signal output from the image data processor to gate line of the liquid crystal display part:

In the same field of endeavor, Someya discloses a liquid crystal driving circuit wherein teaches error correction method for driving LC display unit (see Fig. 60(10), LCD display unit inherently has a gate driver).

It would have been obvious to one ordinary skill in the art to apply error correction method to LCD as in Someya with display device of Kumashiro, because error correction technique is commonly used to improve accuracy and response speed (see Someya's abstract).

Regarding **claims 12 and 14**, limitations within these claims are identical to **claims 1 and 3**, except they are the method claims. Therefore, same rejections apply to these claims.

5. Claims 6, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumashiro and Someya in further view of AAPA.

As to **claim 6**, Kumashiro and Someya disclose a liquid crystal display device according to claim 1 above.

However, Kumashiro and Someya do not specifically teach wherein the correction value output by said data driver comprises at least one of an output corresponding to a higher luminance than a luminance of the maximum tone and an output corresponding to a lower luminance than a luminance of the minimum tone.

Applicant admitted prior art teaches at least one of an output corresponding to a higher luminance than a luminance of the maximum tone (see AAPA Fig. 7B, output (BC) corresponding to a higher luminance than a luminance of maximum tone (BB)).

It would have been obvious to one ordinary skill in the art at the time of invention was made to use output corresponding to a higher luminance as in APPA into liquid crystal display device of Kumashiro and Someya, since this method contributes to a faster response time (See AAPA [0005]-[0014]).

As to **claim 7**, Kumashiro, Someya and AAPA disclose a liquid crystal display device according to claim 6,

wherein as at least one of the output corresponding to the higher luminance than the luminance of the maximum tone and the output corresponding to the lower luminance than the luminance of the minimum tone (See AAPA Fig. 7A and 7B), a plurality of outputs corresponding to luminances different from each other are allowed to be outputted (see AAPA Fig. 7A and 7B LB and LC are different).

As to **claim 8**, Kumashiro discloses a data driver.

However, Kumashiro's disclosure does teach data driver is used in a LCD.

Someya discloses a liquid crystal display device including a liquid display part and an image data processor for correcting inputting image data based on image data of a preceding frame (See Fig. 60 and Abstract).

Said data driver outputting corrected data (Fig. 60, Dj1) corresponding to all tones designatable by inputted image data, received from the image data processor to the liquid crystal display part (see [0014]).

It would have been obvious to one ordinary skill in the art to apply error correction method to LCD as in Someya with display device of Kumashiro, because

error correction technique is commonly used to improve accuracy and response speed (see Someya's abstract).

In addition, Kumashiro and Someya do not specifically teach at least one of an output corresponding to a higher luminance than a luminance of a maximum tone and an output corresponding to a lower luminance than a luminance of a minimum tone.

Applicant admitted prior art teaches at least one of an output corresponding to a higher luminance than a luminance of the maximum tone (see AAPA Fig. 7B, output (BC) corresponding to a higher luminance than a luminance of maximum tone (BB)).

It would have been obvious to one ordinary skill in the art at the time of invention was made to use output corresponding to a higher luminance as in APPA into liquid crystal display device of Kumashiro and Someya, since this method contributes to a faster response time (See AAPA [0005]-[0014]).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kumashiro (US 5,898,796) and Someya (US 2003/0080983).

As to **claim 10**, Kumashiro discloses a liquid crystal display device configured to compare inputted image data and image data of a preceding frame and subject the inputted image data to data correction for improving response speed of liquid crystal based on a result of the comparison, comprising

a correction amount in the data correction is changed by a unit of at least one horizontal display line of a display part (see Fig. 16(71) and Col. 9 lines 1-17).

However, Kumashiro's disclosure does teach error correction method is used in a LCD.

Someya discloses a liquid crystal display device including a liquid display part and an image data processor for correcting inputting image data based on image data of a preceding frame (See Fig. 60 and Abstract).

data driver outputting corrected data (Fig. 60, Dj1) corresponding to all tones designatable by inputted image data, received from the image data processor to the liquid crystal display part (see [0014]).

a gate driver for outputting control signal output from the image data processor to gate line of the liquid crystal display part (see Fig. 60(10), LCD display unit inherently has a gate driver).

It would have been obvious to one ordinary skill in the art to apply error correction method to LCD as in Someya with display device of Kumashiro, because error correction technique is commonly used to improve accuracy and response speed (see Someya's abstract).

In addition, Kumashiro and Someya do not teach a backlight that is impulse-driven.

Official Notice is taken for a backlight that is impulse-driven.

It would have been obvious to one ordinary skill in the art at the time the invention was made to use impulse-driven for backlight control into liquid crystal display device of Kumashiro and Someya, since this technique is commonly used for LCD backlight.

Response to Arguments

6. Applicant's arguments filed 03/06/2009 have been fully considered but they are not persuasive.
7. Regarding claim 1, applicant argues that Kumashiro is not directed to a liquid crystal device and it does not disclose or suggest the data driver for outputting the corrected data to the data lines of a LCD. However, examiner respectfully disagrees, Kumashiro's image processing method is a generic one which applies to printer, CRT or other display, and this error diffusion technique is also commonly used on driving LCD (see Someya's disclosure for example). Since the common purpose is to improve accuracy and response speed, it would be obvious to use Kumashiro's technique with a liquid crystal device.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUK CHOW whose telephone number is (571)270-1544. The examiner can normally be reached on 8-6 M-TH E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on 571 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. C./
Examiner, Art Unit 2629

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629